

Additional records of the genus *Cleora* (Geometridae, Ennominae) from the Philippines, with descriptions of one new species and two new subspecies

Rikio SATO

2-27-29, Shindori-nishi, Niigata, 950-21 Japan

Abstract Fourteen species of *Cleora* are recorded from the Philippines, with descriptions of *C. copia* sp. nov., *C. tella mindana* ssp. nov. and *C. repulsaria philippinica* ssp. nov.

Key words *Cleora*, Geometridae, new records, new species and subspecies, Philippines.

In my previous paper (Sato, 1989) twenty-one species of the genus *Cleora* were recorded from the Philippines based on the collections of Zoologisk Museum, Copenhagen, National Science Museum, Tokyo, and Kitakyushu Museum of Natural History, Kitakyushu. Later further specimens of *Cleora* from various islands of the Philippines have accumulated rather rapidly in my collection. Additionally I was able to examine much material in Bishop Museum through the courtesy of Dr S. E. Miller. In this paper I will record fourteen species including one new species and two new subspecies. The species newly recorded from the individual island are marked with an asterisk. Besides, some taxonomic notes will be given to some species. Distributional information is restricted to the range in the Philippines.

The following abbreviations are used to indicate the location of specimens. BMNH : The Natural History Museum, London. BMH : Bishop Museum, Honolulu. NSMT : National Science Museum, Tokyo. ZFMK : Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn. RS : R. Sato collection, Niigata. NB : N. Bito collection, Nagoya.

***Cleora repetita* (Butler)**

Negros : 1 ♂, Mt Canlaon, x. 1995, RS.

Distribution. Negros*, Palawan, Balabac, Mindanao, Tawi Tawi.

***Cleora alienaria* (Walker)**

Mindanao : 1 ♂ 3 ♀, "Z. DEL SUR, 24 km, NW of Mibuk, nr. Lebak, 210-240 m, 8. viii. 1958/Logged area/Light Trap, H. E. Milliron", BMH.

Distribution. Luzon, Bohol, Cebu, Palawan, Mindanao*.

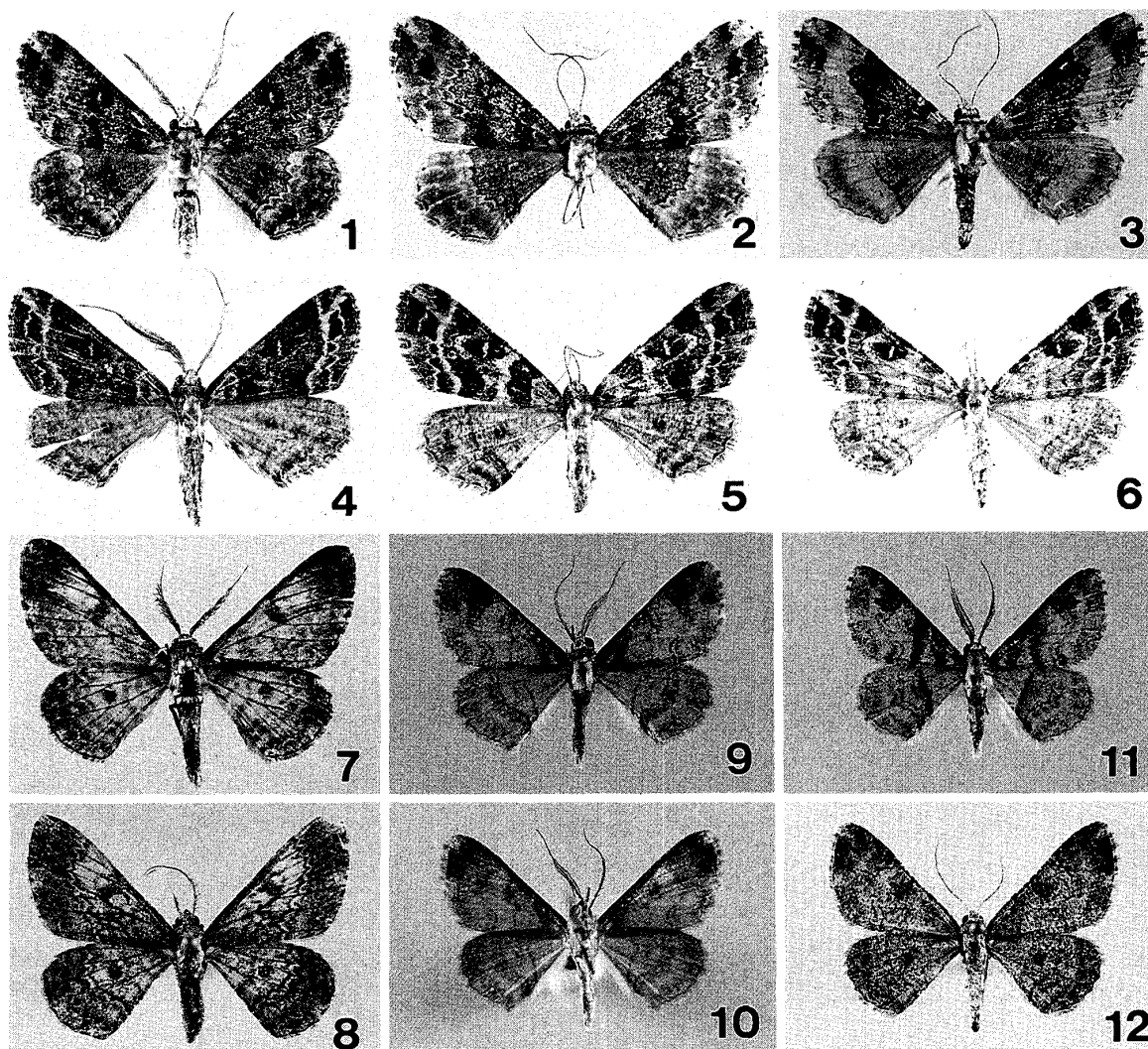
***Cleora concentraria* (Snellen)**

Boarmia concentraria Snellen, 1877, *Tijdschr. Ent.* **20** : 40.

Boarmia invalidaria Snellen, 1895, *Dt. ent. Z. Iris* **8** : 147.

Cleora concentraria : Prout, 1929, *Bull. Hill Mus. Witley* **2** : 209.

Mindanao : 1 ♂, Mt Kalatungan, 1995 ; 1 ♀, Mt Kitanglad, 4. i. 1995 ; 1 ♂ 1 ♀, Mt Busa, 1996. All in RS.



Figs 1-12. *Cleora* spp. 1-3. *C. tella mindana* ssp. nov. (1: holotype, ♂. 2: paratype, ♀. 3: paratype, ♀). *C. telloides* Sato (4: ♂. 5: ♀. 6: ♀). 7-8. *C. repulsaria philippinica* ssp. nov. (7: holotype, ♂. 8: paratype, ♀). 9-12. *C. copia* sp. nov. (9: holotype, ♂. 10: *ditto*, underside. 11: paratype, ♂. 12: paratype, ♀).

Distribution. Mindanao*.

New record from the Philippines. This species was described from Java, and later two subspecies were added by Prout as follows. Sulawesi: ssp. *praia* Prout, 1928, *Bull. Hill Mus. Witley* 2: 251. Nias: ssp. *inobeda* Prout, 1929, *op. cit.* 3: 210. The specimens from Mindanao are more similar to *praia* than to *inobeda* in appearance.

***Cleora tella tella* (West)**

Boarmia tella West, 1929, *Novit. zool.* 35: 119.

Cleora tella: Prout, 1929, *Bull. Hill Mus. Witley* 3: 200.

Negros: 13 ♂ 5 ♀, Mt Canlaon, x. 1995, RS.

Distribution. Luzon, Negros*, Palawan.

The specimens taken from Negros agree with those of the nominotypical subspecies in the genitalia of both sexes.

***Cleora tella mindana* ssp. nov.** (Figs 1-3)

Cleora tella: Sato, 1989: 160, figs 5 & 6 (male and female), figs 28 & 32 (male and female genitalia).

In my previous paper (Sato, 1989) I mentioned that three specimens of *tella* from Mindanao are different from the populations of Luzon and Palawan in the male and female genitalia, and suggested a racial separation in the future. After a close examination based on further more material, I have been convinced that Mindanao population deserves a racial name.

Very variable in colour and markings as in the nominotypical subspecies, but clearly different in the genitalia as follows. Male and female genitalia of the nominotypical subspecies were illustrated by me (Sato, 1989, figs 27 & 31).

Male genitalia (Fig. 13). Apical part of harpe not rounded, bifurcate; sacculus arm shorter and slenderer. See my previous paper (Sato, 1989: 163, fig. 28).

Female genitalia. Colliculum shorter; ductus bursae much stouter. See my previous paper (Sato, 1989: 166, fig. 32).

Holotype. ♂, Mindanao, Mt Busa, x. 1996 (native collector), NSMT. Paratypes. 1 ♂ 2 ♀, Davao, Upper Baractan, Apo Range, Mt Talomo 1,100 m, 3-6. viii. 1985 (M. Owada), NSMT; 1 ♂ 2 ♀, Mt Tagbud, 16-17. viii. 1996; 1 ♂ 1 ♀, Bukidnon, Mt Kitanglad, 4. i. 1995; 1 ♀, Mt Matutum, x. 1995 (native collector), NSMT & RS. 22 ♂ 12 ♀, Mt Kitanglad 1,700 m, 8°07'N, 124°55'E, viii. 1993; 12 ♂ 2 ♀, *ditto* 2,200 m, 5. viii. 1993; 1 ♂, *ditto* 2,300 m, 5. viii. 1993; 1 ♂, *ditto* 2,800 m, 5. viii. 1993; 4 ♂ 1 ♀, *ditto*, Intavas 1,650 m, 5. viii. 1993 (V. Siniaev), *ex coll.* A. Schintlmeister, ZFMK.

Distribution. Mindanao*.

This subspecies is distributed from 1,100 m to 2,800 m in Mindanao.

***Cleora telloides* Sato** (Figs 4-6)

Cleora telloides Sato, 1989: 160, fig. 7 (male), fig. 26 (male genitalia).

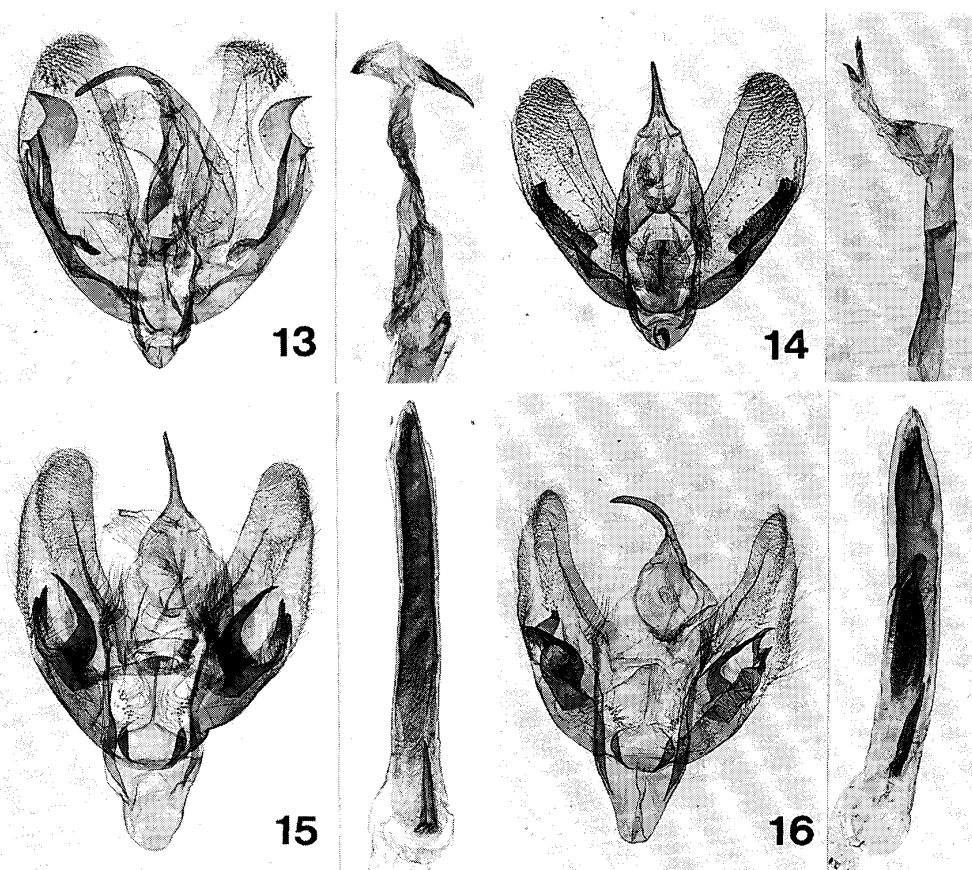
Mindanao: 1 ♂ 2 ♀, Bukidnon, Mt Kitanglad, 4. i. 1995, 8 ♂ 4 ♀, data unknown; 2 ♂ 1 ♀, S. Cotabato, Mt Matutum, x. 1995; 1 ♂, Mt Tagbud, 16-17. viii. 1996 (native collector). All in RS.

This species was described based on one male taken in Mindanao. Recently I examined additional specimens including some females from Mindanao.

Female (Figs 5-6). Length of forewing 18-20 mm. Very similar to the commonest form of *tella* as in male, but submarginal yellowish band tending to be more developed than in *tella*.

Female genitalia (Fig. 18). Colliculum shorter; bursa copulatrix slenderer, almost membranous without posterior sclerotization.

Distribution. Mindanao.



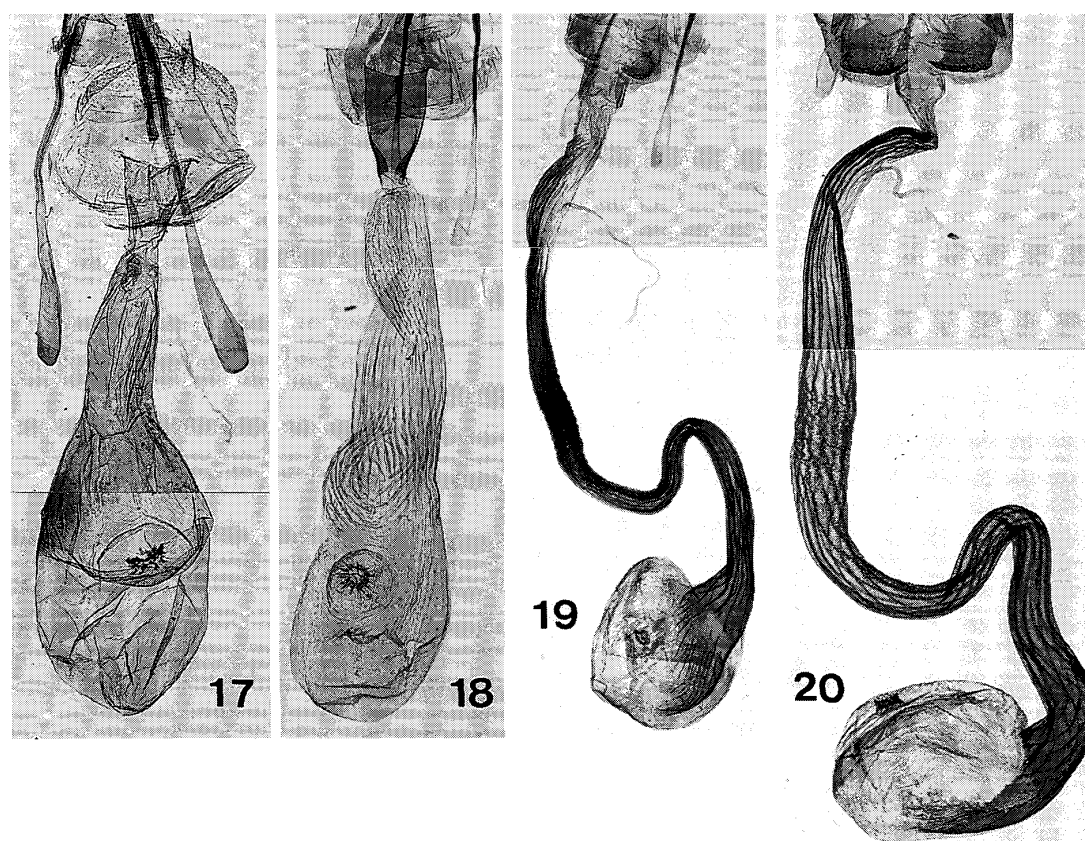
Figs 13-16. Male genitalia of *Cleora* spp. 13. *C. tella mindana* ssp. nov. RS-4788. 14. *C. copia* sp. nov. RS-4695. 15. *C. repulsaria repulsaria* (Walker). Hong Kong. RS-4887. 16. *C. repulsaria philippinica* ssp. nov. RS-2578.

It seems likely that this species is confined to Mindanao.

***Cleora copia* sp. nov.** (Figs 9-12)

Length of forewing 14-16 mm. Male. Antenna doubly bipectinate, the secondary pectinations very short and slender; distal one-third without pectination. Tegula, patagium and thoracic vestiture grey; patagium edged with black. Crest on first abdominal segment white. Forewing: greyish white with blackish brown markings proximad of antemedial line and distad of postmedial line near termen; antemedial line slanting inward to inner margin; postmedial line gently outcurved between veins M_1 and M_3 ; medial line slightly incurved medially, obscure in general, but in some specimens represented by a broad black band (Fig. 11); a short orange streak on vein M_1 faintly reproduced beyond cell; discocellular spot weak or absent; subterminal line grey, zigzag, almost invisible. Hindwing: similar to forewing, but antemedial line lacking. Underside: paler in colour than upperside, lines less defined, discocellular spot weakly represented; distal area varyingly suffused with black except for apical and medial parts of forewing. Female. Antenna ciliate. Both wings uniformly grey, lines poorly developed, discocellular spots usually visible; underside strongly marked, especially black discocellular spots and distal black bands well developed.

Male genitalia (Fig. 14). Scobinate medial part of gnathos smoothly rounded; arms of sacculus rectangular, densely spined and rasp-like on its dorsal surface; vesica with two small



Figs 17–20. Female genitalia of *Cleora* spp. 17. *C. copia* sp. nov. RS-4909. 18. *C. telloides* Sato. RS-4639. 19. *C. repulsaria philippinica* ssp. nov. RS-4893. 20. *C. repulsaria repulsaria* (Walker). Hong Kong. RS-4888.

cornuti.

Female genitalia (Fig. 17). Sterigma lightly sclerotized; colliculum tapered anteriorly; bursa copulatrix almost membranous, with a stellate signum.

Holotype. ♂, Philippines, Negros, Mt Canlaon, x. 1995 (native collector), NSMT. Paratypes. 6 ♂ 1 ♀, Negros, Mt Canlaon, x. 1995 (native collector), NSMT & RS; 1 ♂, *ditto*, viii. 1995 (native collector), NB. 5 ♂, Mindanao, Bukidnon, Mt Kitanglad 1,700 m, 8°07'N, 124°55'E, viii. 1993 (V. Siniaev), *ex coll.* A. Schintlmeister, ZFMK; 1 ♂, Bukidnon, 15 km NW Maramag, Mt Kalatungan, sec. forest, Mt Bagong Silang, 1,250 m, 29. xii. 1991 (K. Cerny), ZFMK; 2 ♂, Mt Kitanglad, data unknown (native collector); 1 ♂, Bukidnon, Mt Binansilang 1,200 m, 45 km NW Maramag, 7°55'N, 124°40'E, 2. x. 1988 (K. Cerny & A. Schintlmeister); 3 ♂ 5 ♀, S. Cotabato, Mt Matutum, x. 1995; 10 ♂ 9 ♀, *ditto*, v. 1996 (native collector), NSMT & RS.

Distribution. Negros*, Mindanao*.

Cleora decisaria (Walker)

Mindanao: 1 ♂, “Z. DEL SUR, 24 km, NW of Mibuk, nr. Lebak, 210–240 m, 8. viii. 1958/Logged area/Light Trap, H. E. Milliron”, BMH.

Distribution. Luzon, Palawan, Mindanao*.

Cleora injectaria (Walker)

Negros: 2 ♂, Mt Canlaon, x. 1995, RS.

Distribution. Negros*, Balabac, Mindanao, Tawi Tawi.

Cleora batillata (Fletcher)

Leyte: 2 ♂, 25–29. iii. 1995, RS. Negros: 1 ♂, Mt Canlaon, RS.

Distribution. Luzon, Mindoro, Leyte*, Negros*, Palawan, Mindanao, Tawi Tawi.

Cleora onycha limitata (Fletcher)

Leyte: 1 ♂, 2. xii. 1994, RS.

Distribution. Luzon, Mindoro, Leyte*, Palawan, Balabac, Mindanao.

***Cleora repulsaria philippinica* ssp. nov.** (Figs 7–8)

Boarmia repulsaria Walker, 1860, *List Specimens lepid. Insects Colln Br. Mus.* **21**: 374.

Carecomotis repulsaria: Fletcher, 1953, *Ann. Mag. nat. Hist.* (12) **6**: 118.

Cleora repulsaria: Sato, 1989: 165, fig. 14 (male), fig. 30 (aedeagus).

Length of forewing 18–19 mm. Different from the nominotypical subspecies in a reduction of cinnamon or russet suffusion at the basal and distal areas of wings, which gives much paler appearance.

Male genitalia (Fig. 16). Cucullus not rounded but narrowed apicad. Aedeagus broader with two cornuti, ribbed one much longer and broader than the other.

Female genitalia (Fig. 19). Sterigma less developed, one and half times as wide as colliculum.

Holotype. ♂, N. Luzon, Mts Prov., Chatol 15 km SE Bontoc, 17°02'N, 121°03'E, 1,600 m, 24. ix–14. x. 1988 (K. Cerny & A. Schintlmeister), NSMT. Paratypes. 1 ♂, same data as holotype; 1 ♂, Luzon, Banaway, 18. i. 1986 (native collector); 1 ♀, Marinduque, i. 1995 (native collector); 1 ♂, Mindoro, San Jose, 12°15'N, 121°02'E, 31. i–1. ii. 1988 (K. Cerny & A. Schintlmeister); 1 ♂, Negros, Mt. Canlaon, x. 1995; 1 ♂, Palawan, 5. ii. 1985 (native collector), NSMT & RS.

Distribution. Luzon, Marinduque*, Mindoro, Negros*, Palawan.

I examined a pair of specimens (Po Toi I., 2. v. 1996, by G. Reels) collected in Hong Kong, the type locality of *repulsaria* and many Japanese and Taiwanese specimens from various places. Japanese and Taiwanese populations should be treated as the nominotypical subspecies, having similar characteristics in appearance and genital structures.

Cleora dacasini Herbulot

Cleora dacasini Herbulot, 1981: 33.

Cleora inopinata Sato, 1989: 165. **Syn. nov.**

I described *inopinata* as new to science from Luzon without noticing Herbulot's work (1981).

After I examined one of the paratypes of *C. dacasini* Herbulot, 1981, from Luzon, and studied the original description accompanying the male genitalia illustration, I have concluded to sink *inopinata* into *dacasini*.

Type specimen examined. Paratype of *dacasini*. 1 ♂, "PHILIPPINES, Baguio, Santo Tomás, 28. IX. 1980, Domingo A. Dacasin/Brit. Mus. 1981-287", BMNH.

Some specimens taken from the other islands than Luzon are recorded below.

Negros: 1 ♂ 1 ♀, Mt Canlaon, x. 1995, RS. Mindanao: 1 ♂, "Bukidnon 1,480 m, Mt Katanglad, 27-31. x. 1959/Light Trap, L. Quate & C. Yoshimoto", BMH; 2 ♂, Mt Tagbud, 2 ♂, 16-17. viii. 1996, RS.

Distribution. Luzon, Negros*, Mindanao*.

Cleora pupillata luzonensis (Fletcher)

Lyte: 7 ♂ 2 ♀, 25-29. iii. 1995, RS. Negros: 2 ♂, Mt Canlaon, RS.

Distribution. Luzon, Leyte*, Negros*, Palawan, Mindanao.

Cleora contiguata brooksi (Fletcher)

Balabac: 4 ♂, 8. ix. 1995, RS.

Distribution. Palawan, Balabac*.

Cleora contiguata bigladiata (Fletcher)

Negros: 3 ♂, Mt Canlaon, x. 1995, RS. Mindanao: 3 ♂ 1 ♀, "Z. DEL SUR, 24 km, NW of Mibuk, nr. Lebak, 210-240 m, 8. viii. 1958/Logged area/Light Trap, H. E. Milliron", BMH.

Distribution. Luzon, Mindoro, Negros*, Mindanao*.

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摘 要

1 新種と 2 新亜種を含むフィリピン産 *Cleora* 属 (シャクガ科エダシャク亜科) の追加記録 (佐藤力夫)

筆者は前報 (Sato, 1989) で、フィリピン諸島から 1 新種を含む 21 種の *Cleora* を記録した。その後ハワイの Bishop Museum から大量の標本が供給され、私自身も多くの標本を入手することができた。その結果、1 新種を見いだすとともに、前報の段階では標本が少ないため分離することを控えた 2 亜種を多くの標本に基づいて記載した。また、筆者が前報で新種として記載した *C. inopinata* を、*C. dacasini* Herbulot のシノニムとして整理し、1 ♂に基づいて記載した *C. telloides* Sato の♀とその交尾器を図示するとともに追加標本を記録した。新タクサは次の通りである。

新種. *Cleora copia* Sato (Negros, Mindanao).

新亜種. *Cleora tella mindana* Sato (Mindanao), *C. repulsaria philippinica* Sato (Luzon, Marinduque, Mindoro, Negros, Palawan).

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